

a head moving mechanism for moving said printing head in a sub scan direction perpendicular to the main scan direction;

a head driver for driving said printing head on the basis of one frame of image data read out from said memory means in a line sequential fashion while said printing head is moved in the sub scan direction, to expose said instant film line by line while said instant film stands still; and

developing rollers for advancing said instant film after exposure out of a camera body while developing said processing solution inside said exposed instant film.

--30. An electronic still camera according to claim 29, further comprising:

a memory storing predetermined image data;

a device for reading out appropriate image data from said memory and composing said appropriate image data with said image data of a subject image; and

a display device for displaying said subject image or a composite image on the basis of said subject image data or said composed image data respectively, wherein said printing device may print said composite image on the basis of said composed image data.

--31. An electronic still camera according to claim 29, further comprising a film exit formed through a top face of said camera body, through which said exposed instant film

is advanced out in a direction parallel to the sub scan direction.

--32. An electronic still camera according to claim 29, further comprising external terminals for communicating image data with external apparatuses, including printers, computers and memories.

--33. An electronic still camera according claim 29, wherein said printing head sequentially emits red, green and blue light beams such that a full-color image is printed in a three color frame sequential fashion.

--34. An electronic still camera according to claim 29, wherein said printing head simultaneously emits red, green and blue light beams such that a full-color image is printed while said printing head makes a single movement in the sub scan direction.

--35. An electronic still camera according to claim 33, wherein said printing head comprises a fluorescent lamp, a red pass filter, a green-pass filter, a blue pass filter, a filter switching device for positioning one of said three filters in a light path of said fluorescent lamp, an LCD array arranged in a row in the light path of said fluorescent lamp, and an optical system for projecting light from said fluorescent lamp onto said instant film.

--36. An electronic still camera according to claim 33, wherein said printing head comprises a fluorescent light source array consisting of a plurality of fluorescent light sources arranged in a row in correspondence with respective pixels, a red pass filter, a green pass filter, a blue pass filter, a filter switching device for positioning one of said three filters in a light path of said fluorescent light source array, and an optical system for projecting light from said fluorescent light source onto said instant film.

--37. An electronic still camera according to claim 29, wherein said electronic still camera may be repeatedly loaded with an instant film pack containing a plurality of said instant films.

--38. An electronic still camera comprising an imaging device for obtaining electronic image data from an optical image of a subject, memory means for recording said image data therein, and a printing device for printing an image on an instant film containing a processing solution therein, said printing device comprising:

a printing head which is elongated in a main scan direction and simultaneously emits three color light beams of red, green and blue;

a head driver for driving said printing head to expose said instant film line by line on the basis of image data of one frame read out line by line from said memory means

while said instant film is advanced in a sub scan direction;
and

developing rollers for advancing said instant film
out of a camera body in the sub scan direction and developing
said processing solution inside said instant film while said
instant film is exposed;

a speed detection device for detecting advancing
speed of said instant film; and

a device for controlling timing of light emission of
said printing head in accordance with the film advancing
speed.

--39. An electronic still camera according to claim
38, further comprising:

a memory storing predetermined image data;

a device for reading out appropriate image data from
said memory and composing said appropriate image data with
said image data of a subject image; and

a display device for displaying said subject image
or a composite image on the basis of said subject image data
or said composed image data respectively, wherein said
printing device may print said composite image on the basis of
said composed image data.

--40. An electronic still camera according to claim
38, further comprising external terminals for communicating
image data with external apparatuses, including printers,
computers and memories.

--41. An electronic still camera according to claim 38, wherein said electronic still camera may be repeatedly loaded with an instant film pack containing a plurality of said instant films.

--42. An electronic still camera comprising:

an imaging and recording device for displaying a moving image of a subject on a display panel based on an image signal picked up through an image sensor in a real time fashion, obtaining digital image data from said image signal and recording said image data frame by frame in memory means in response to a shutter release signal;

a display device for displaying a still image on said display panel on the basis of image data read out from said memory means;

a printing device for printing an image on a photosensitive recording medium by driving a printing head on the basis of image data read out from said memory means; and

a mode selection device for selecting and switching one of said imaging and recording device, said display device and said printing device to an active condition, wherein said mode selection device automatically sets an imaging mode, immediately after a power switch is turned on, where said imaging and recording device is active, and said mode selection device, immediately after a print mode is selected, terminates said imaging mode, or a display mode where said display device is active, and makes said printing device ready

and causes said display panel to display a still image on the basis of image data recorded last in said memory means, and said printing device prints the image that is displayed on the display panel in response to a print execution signal.

--43. An electronic still camera according to claim 42, wherein said display panel stops displaying any image upon said print execution signal, and all signals input through external operation are canceled until said printing device completes making at least one sheet of print.

--44. An electronic still camera according to claim 42, wherein said photosensitive recording medium is an instant film containing a processing solution therein, and said electronic still camera further comprises developing rollers for advancing said instant film out of a camera body while developing said processing solution in said instant film as an image is recorded on said instant film by said printing device.

--45. An electronic still camera according to claim 43, wherein said photosensitive recording medium is an instant film containing a processing solution therein, and said electronic still camera further comprises developing rollers for advancing said instant film out of a camera body while developing said processing solution in said instant film as an image is recorded on said instant film by said printing device.

--46. An instant printer for printing an image on an instant film containing a processing solution therein by exposing said instant film and developing said processing solution in said exposed instant film, the instant printer comprising:

a film advancing device for advancing said instant film to outside, said film advancing device including developing rollers for developing the processing solution in said exposed instant film as being passed therethrough;

a printing head located near and before said developing rollers in the film advancing direction, said printing head having an array of light emitting elements arranged in a main scan direction perpendicular to the film advancing direction; a speed detection device for detecting advancing speed of said instant film by said film advancing device; and

a head driver for driving said light emitting element array in accordance with digital image data fed to said head driver in a line sequential fashion while controlling timing of light emission of said light emitting elements in accordance with the film advancing speed, thereby to expose said advancing instant film line by line.

--47. An instant printer according to claim 46, wherein said instant printer is provided with a speed detection track having marks arranged at regular intervals along the film advancing direction, and said speed detection device

detects the film advancing speed with reference to said marks of said speed detection track.

--48. An instant printer according to claim 46, wherein said light emitting elements are arranged in three rows for emitting three color light beams respectively, and are driven simultaneously in accordance with image data of three colors of one line.

--49. An instant printer according to claim 48, wherein said printing head further comprises an optical system for projecting the three color light beams from the three rows of light emitting elements into a line on said instant film.

--50. An instant printer according to claim 46, further comprising an external terminal for inputting image data from external apparatuses.

--51. An instant printer according to claim 46, wherein said instant printer is integrally or removably mounted to an electronic still camera having an imaging device for capturing electronic image data from an optical image of a subject, and memory means for recording said image data therein.

--52. An instant film containing a processing solution therein which is developed over a photosensitive surface of said instant film while said instant film is advanced through developing rollers, said instant film

comprising a speed detection track extending along a developing direction of said processing solution, said speed detection track having marks arranged at regular intervals along said track, allowing to detect an advancing speed of said instant film with reference to said marks.

--53. An electronic still camera comprising a pack loading chamber for loading a film pack containing a plurality of self-developing type instant films each having a pod containing a processing solution, an image sensor for photographing a subject image and outputting an image signal, a memory for storing image data obtained from said image signal through digital conversion, a printing head for exposing said instant film on the basis of image data of one frame read out from said memory, a head moving mechanism for moving said printing head along an exposure surface of said instant film, a claw that engages with an edge of said instant film after exposure, and pushes said instant film toward an exit that is formed through a camera body, developing rollers disposed near said exit to nip said instant film as pushed by said claw and advance said instant film out of said exit, thereby to crush open said pod to develop said processing solution inside said instant film, a developing and driving mechanism for driving said claw and said developing rollers, and a power source battery for supplying power to said image sensor, said head moving mechanism and said developing and driving mechanism,

said electronic still camera is characterized in that said head moving mechanism and said developing and driving mechanism are located on opposite sides of said pack loading chamber.

--54. An electronic still camera according to claim 53, wherein said image sensor and said power source battery are located outside said head moving mechanism or said developing and driving mechanism.

--55. An electronic still camera comprising:

a taking lens mounted on a front side of a box-shaped camera body;

an image sensor for photographing a subject image through said taking lens and outputting an image signal;

a memory for storing image data obtained from said image signal through digital conversion;

an optical printer for exposing an instant film containing a processing solution therein in accordance with image data of one frame read out from said memory;

a developing and driving device including developing rollers for developing said processing solution while advancing said instant film after exposure out of said camera body; and

an operating section mounted on a back side of said camera body and operated from controlling said optical printer.

Ko AOSAKI et al.

--56. An electronic still camera according to claim 54, wherein a chamber for loading said instant film is provided in the front side of said camera body.

--57. An electronic still camera according to claim 55, wherein an LCD panel is provided on the back side of said camera body.

--58. An electronic still camera according to claim 56, wherein an LCD panel is provided on the back side of said camera body.--

R E M A R K S

The above changes in the claims merely place this national phase application in the same condition as it was during Chapter II of the international phase, with the multiple dependencies being removed.

Respectfully submitted,

YOUNG & THOMPSON

By

Benoît Castel
Benoît Castel

Attorney for Applicants
Registration No. 35,041
745 South 23rd Street
Arlington, VA 22202
Telephone: 703/521-2297

April 13, 2000